

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, SEPTEMBER 19, 1955

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATION

1.1 Introduction

During the past two weeks 510 coded programs were run on the time allocated to the Scientific and Engineering (S&EC) Group. These programs represent part of the work that has been done on 47 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

<u>Problem No.</u>	<u>Title</u>	<u>Minutes</u>
100	Comprehensive System of Service Routines	244.5
106 C.	MIT Seismic Project	26.1
120 B,N.	The Aerothermopressor	10.8
122 N.	Coulomb Wave Functions	6.0
126 D.	Data Reduction	5.1
131	Special Problems (Staff Training, etc.)	94.5
155 N.	Synoptic Climatology	50.8
177 C.	Low Aspect Ratio Flutter	10.5
193 L.	E.V. Problem for Propagation of E.M.Waves	43.4
194 B,N.	Augmented Plane Wave Method (Sodium)	53.5
199 N.	Compressible Flow in a Tube	43.6
216 C.	Ultrasonic Delay Lines	35.0
219	Linear Programming	66.3
226 D.	Circulation of the Atmosphere	50.2
231 B,N.	Reactor Runaway Prevention	22.7
235 B,N.	Eigenvalues for a Spheroidal Square Well	593.3
236 C.	Transient Response of Aircraft to Heating	65.9

241 B,N.	Transients in Distillation Columns	37.0
245 N.	Theory of Neutron Reactions	77.9
246 B,N.	Scattering From Oxygen	26.6
253 N.	APW as Applied to Face- and Body-Centered Iron	64.8
259 L.	Ionosphere Computation	880.5
260 N.	Energy Levels of Diatomic Hydrides	14.4
261 C.	Fourier Synthesis for Crystal Structures	4.3
266 A.	Calculations for the MIT Reactor	76.9
270 B.	Critical Mass Calculations	35.7
272 L.	General Raydist Solution	32.1
273 N.	Cosmic Ray Air Shower	21.3
274 N.	Multiple Scattering	34.0
278 N.	Energy Levels of Diatomic Hydrides LiH	104.2
279 D.	Queueing	26.2
285 N.	APW as Applied to Chromium Crystal	22.7
288 N.	Atomic Wave Functions	256.8
291 B.	Dynamic Buckling	23.2
297 B.	Diffusion Boundary Layer	55.9
299 C.	Heat Transfer in Turbulent Flow	261.1
300 L.	Tropospheric Propagation	58.9
304 A.	Relativistic Atomic Wave Functions	479.4
306 D.	Spectral Analysis of Atmospheric Data	23.4
307 C.	Supersonic Nozzle Design	20.6
308 C.	Frequency Analysis of Aperiodic Functions	4.0
309 B,N.	Pure and Impure Potassium Chloride Crystal	28.8
310 C.	Rocket Trajectory Calculations	23.0
311 N.	Solitary Wave Generating Cam	52.3
312 L.	Error Analysis	166.1
314 C.	Factoring High Order Polynomials	8.8
316 L.	Radar Correlations	2.3

1.3 Computer Time Statistics

The following indicates the distribution of WWI time allocated to the S&EC Group.

Programs	70 hours, 41.1 minutes
Magnetic Drum Test	22.2 minutes
Magnetic Tape Test	1 hour , 08.1 minutes
Scope Calibration	14.0 minutes
PETR Test	27.5 minutes
Test Storage Check	5.2
Demonstrations (No. 131)	<u>1 hour , 34.5 minutes</u>
Total Time Logged	74 hours, 42.6 minutes
Div. 6 Conversions, Inter-run Operations, etc.	14 hours, 48.2 minutes
Total Time Assigned	94 hours, 08.4 minutes
Usable Time, Percentage	96.7 %
Number of Programs	510